

**ACT MATH** is all about basic math ideas presented in unusual ways.  
*The challenge on the ACT Math test isn't the math, it's how the math is presented.*

We need to know two basic things to do well:

- basic knowledge of the kinds of math that can appear on the ACT
- understanding of the unwritten rules, patterns and standards that dictate how the questions can operate

### **ACT Math Rules**

1 – You Have to Know the Words and Symbols

*Review terminology that is common in the ACT Math section (see sample tests)*

2 – No Advanced Formulas

*Formulas will be relatively simple and largely repetitive – the challenge of the questions is figuring out what the question is asking and deciding which formula to apply.*

*Keep your eye out for a “note” trig question – the note will explain the formula needed to answer the question.*

3 – Calculations are Relatively Simple

*Most calculations should be relatively easy – the challenge is how to set the problem up.*

4 – Limited Subject Matter

*The math cannot go beyond basic trig – it's a standardized test. Don't panic.*

5 – 30 Seconds or Less

*Every ACT math question can be solved in 30 seconds or less (if you find the most efficient approach to solving the problem).*

6 – All Necessary Information

*Unless there's an answer choice that says the correct answer can't be determined from the given information, every question needs to provide all the information you need to find the answer.*

7 – Scale is Pretty Much Always Accurate

*The ACT will warn you that figures are not necessarily drawn to scale but most of them actually are drawn to scale. Use them but verify – do the proportions make sense?*

8 – Answer Choices are Important

*They're not randomly generated – the wrong answer choices tend to reflect common mistakes that are made by students. You can use the set of answer choices to hint at what you need to do to solve the problem.*

### **Testing Values**

You can find the correct answer by testing values in a variable expression in the following two situations:

- a. the question asks us to solve for a variable and the answer choices don't involve variables, plug the answer choice back into the expression from the question
- b. the question has a variable (or variables) in the answer choices, assign an arbitrary value (not 0, 1 or any values that appear in the prompt or answer choices) to that variable/variables and then evaluate each expression in the prompt and answer choices

## **ACT Math Answer-Choice Patterns**

### 1 – “On-the-Way” Answer

*How to avoid: verify that you’ve done the whole problem and that the answer you’ve chosen is answering the question asked.*

### 2 – Calculation Mistake

*Verify you’re completing the correct operation to solve the problem.*

### 3 – Most Like the Others (or *Almost Like the Others*)

*Wrong answers may have some elements of correct answer in them – the correct answer will often have the greatest number of things the same with different answer choices.*

*Don’t select an answer choice based on pattern alone (unless you need to guess due to time).*

### 4 – Half or Double

*There are a lot of ACT Math questions that have you divide or multiply by two. You’ll see answer choices that are half of the right answer or double the right answer.*

*If you see two answer choices and one is twice the other or three in a series that keeps multiplying or dividing by two, one of those choices is most likely correct.*

### 5 – Series

*If you see a series in the answer choices is normally the middle term of the series (or a part of the series).*

## **The Math Path** (*How to answer challenging ACT Math questions*)

### 1. Note the words.

*Read the question carefully looking for math terms and concepts.*

### 2. Consider the answer choices.

*Answer choices can contain clues and useful information to help solve the problem.*

### 3. Determine the relevant math domains.

*What areas of math are involved in the question? Look at the key terms in the question stem and answer choices.*

### 4. Try to figure out a 30-second solution.

- *look for the answer choice patterns to help you pinpoint the key concepts*
- *look for expressions from the prompt that are equivalent/cancel each other out*
- *look for ways to plug answer choices into an expression or eliminate choices that are too small or too large*
- *generally speaking, don’t rely on formulas*
- *look for the simple solution*

### 5. Carry out your solution.

*Find the answer based on what you know from the question.*

## 6. Check everything!

*Take a little time to re-evaluate your solution by looking at the other answer choices. What mistakes were made in creating them? Does your answer make the most sense?*

### **ACT Math Closing Thoughts**

- know when to use the calculator

#### Four Helpful Situations

- simple calculations
  - evaluating more advanced numerical expressions
  - generating graphs for some questions about functions
  - evaluating expressions with variables
- you can't always solve for every variable
    - some variables can't be solved for individually
    - HINT: when a question asks for the value of an expression with more than one variable, you don't need to solve for the variable
  - your work doesn't matter
    - don't approach the questions formally, there is no partial credit for work
  - finding the areas of odd-looking shapes
    - if the ACT asks you to find the area of an odd-looking shape, then that odd looking shape needs to be made up of a combination of "normal" shapes
    - find the area by breaking it down into the "normal" shapes, finding those areas, and combine those areas
  - don't think about the "order of difficulty"
    - every problem will be at different levels of difficulty for different students – don't assume that the harder problems are at the end
    - approach every question with an open mind – some will take longer than others and this won't change based on where they are in the section
  - "NOT" and "EXCEPT" questions
    - there will be four options that do satisfy what the question is asking about and one that doesn't
    - be careful not to overlook the "not" and "except" in the prompt
    - underline/circle these key words in the question so that you don't miss them